CLAIMS

1. A heat sink which comprises:

(a) an enclosure having a highly thermally conductive surface region and defining an enclosed cavity;

(b) a porous, highly thermally conductive material disposed in said cavity and thermally coupled to said thermally conductive surface; and

(c) a phase change material changing from its initial phase to its final phase responsive to the absorption of heat disposed in said enclosed cavity and in said porous material.

2. The heat sink of claim 1 wherein said initial phase of said phase change material is the solid phase and said final phase is the liquid phase.

3. The heat sink of claim 1 wherein said porous medium is a highly thermally conductive porous medium.

4. The heat sink of claim 2 wherein said porous medium is a highly thermally conductive porous medium.

5. The heat sink of claim 3 wherein said porous medium is aluminum.

6. The heat sink of claim 4 wherein said porous medium is aluminum.

7. The heat sink of claim 1 wherein said porous material is substantially homogeneously disposed within said cavity.

8. The heat sink of claim 2 wherein said porous material is substantially homogeneously disposed within said cavity.

9. The heat sink of claim 3 wherein said porous material is substantially homogeneously disposed within said cavity.

10. The heat sink of claim 4 wherein said porous material is substantially homogeneously disposed within said cavity.

11. The heat sink of claim 5 wherein said porous material is substantially homogeneously disposed within said cavity.

12. The heat sink of claim 6 wherein said porous material is substantially homogeneously disposed within said cavity.

13. The heat sink of claim 1 wherein said thermally conductive surface is composed of highly thermally conductive fibers disposed in a matrix and wherein said porous material is a plurality of said thermally conductive fibers extending from said thermally conductive surface into said cavity.

14. The heat sink of claim 2 wherein said thermally conductive surface is composed of highly thermally conductive fibers disposed in a matrix and wherein said porous material is a plurality of said thermally conductive fibers extending from said thermally conductive surface into said cavity.

15. The heat sink of claim 7 wherein said thermally conductive surface is composed of highly thermally conductive fibers disposed in a matrix and wherein said porous material is a plurality of said thermally conductive fibers extending from said thermally conductive surface into said cavity.

16. The heat sink of claim 8 wherein said thermally conductive surface is composed of highly thermally conductive fibers disposed in a matrix and wherein said porous material is a plurality of said thermally conductive fibers extending from said thermally conductive surface into said cavity.

17. The heat sink of claim 13 wherein said thermally conductive fibers are graphite.

18. The heat sink of claim 14 wherein said thermally conductive fibers are graphite.

19. The heat sink of claim 15 wherein said thermally conductive fibers are graphite.

20. The heat sink of claim 16 wherein said thermally conductive fibers are graphite.